EXHIBIT B
PENDING CLAIMS AFTER ENTRY OF THE AMENDMENT FILED DECEMBER 28, 2001
U.S. PATENT APPLICATION NO. 09/079,819

165. A composition comprising a purified protein which specifically binds a gastro-intestinal tract receptor, which receptor is selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), wherein the purified protein is bound to a material comprising an active agent, said active agent being of value in the treatment of a mammalian disease or disorder, and wherein the protein is selected from the group consisting of

(a) a protein comprising an amino acid sequence selected from SEQ ID NOS:1-55 or a binding portion thereof;

(b) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa_1 Thr Xaa_2 Xaa_3 Ser Xaa_4 Xaa_5 Xaa_6 Asn Xaa_7 Arg (SEQ ID NO:253), where Xaa_1 is Ser or Thr; Xaa_2 is Arg or Lys; Xaa_3 is Lys or Arg; Xaa_4 is Ser or Leu; Xaa_5 is Arg, Ile, Val, or Ser; Xaa_6 is Ser, Tyr, Phe, or His; and Xaa_7 is Pro, His or Arg;

(c) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa_1 Asp Xaa_2 Arg Arg Xaa_3 Xaa_4 (SEQ ID NO:254) where Xaa_1 is Ser, Ala, or Gly; Xaa_2 is Val or Gln; Xaa_3 is Pro, Gly, or Ser; and Xaa_4 is Trp or Tyr;

(d) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa_1 Xaa_2 Ser Ser (SEQ ID NO:255), where Xaa_1 is Ala or Phe; and Xaa_2 is Arg or His;

(e) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256);

(f) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STKRSLIYNHR (SEQ ID NO:257);

(g) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STGRKVFNRR (SEQ ID NO:258);

(h) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: TNAKHSSHNRR (SEQ ID NO:259);

(i) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260);

(j) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: AADQRRGW (SEQ ID NO:261);

(k) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DGRGGRSY (SEQ ID NO:262);

(l) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263);

(m) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRSGCGFRGSS (SEQ ID NO:264); and

(n) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRGGCGAHSS (SEQ ID NO:265).

166. The composition of claim 165 wherein the protein comprises an amino acid sequence selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.

167. The composition of claim 165 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa_1 Thr Xaa_2 Xaa_3 Ser Xaa_4 Xaa_5 Xaa_6 Asn Xaa_7 Arg (SEQ ID NO:253),

where Xaa_1 is Ser or Thr; Xaa_2 is Arg or Lys; Xaa_3 is Lys or Arg; Xaa_4 is Ser or Leu; Xaa_5 is Arg, Ile, Val, or Ser; Xaa_6 is Ser, Tyr, Phe, or His; and Xaa_7 is Pro, His or Arg.

168. The composition of claim 165 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa_1 Asp Xaa_2 Arg Arg Xaa_3 Xaa_4 (SEQ ID NO:254) where Xaa_1 is Ser, Ala, or Gly; Xaa_2 is Val or Gln; Xaa_3 is Pro, Gly, or Ser; and Xaa_4 is Trp or Tyr.

169. The composition of claim 165 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa_1 Xaa_2 Ser Ser (SEQ ID NO:255), where Xaa_1 is Ala or Phe; and Xaa_2 is Arg or His.

170. The composition of claim 165 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256) or STKRSLIYNHR (SEQ ID NO:257) or STGRKVFNRR (SEQ ID NO:258) or TNAKHSSHNRR (SEQ ID NO:259).

171. The composition of claim 165 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260) or AADQRRGW (SEQ ID NO:261) or DGRGGRSY (SEQ ID NO:262).

172. The composition of claim 165 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263) or SVRSGCGFRGSS (SEQ ID NO:264) or SVRGGCGAHSS (SEQ ID NO:265).

173. The composition of claim 165 wherein the material is a particle containing the active agent.

174. The composition of claim 165 wherein the material is a slow-release device containing the active agent.

175. The composition of claim 165 wherein the active agent is a drug.

176. The composition of any one of claims 166-175 wherein the purified protein is not more than 40 amino acids in length.

177. The composition of any one of claims 166-175 wherein the purified protein is not more than 30 amino acids in length.

178. The composition of any one of claims 166-175 wherein the purified protein is not more than 20 amino acids in length.

179. The composition of any one of claims 166-175 wherein said composition facilitates the transport of the active agent through human or animal gastro-intestinal tissue.

180. A pharmaceutical composition comprising a therapeutically effective amount of the composition of any one of claims 166-175, and a pharmaceutically acceptable carrier.

181. A composition comprising a chimeric protein wherein the chimeric protein is bound to a material comprising an active agent of value in the treatment of a mammalian disease or disorder, and wherein the chimeric protein comprises (i) an amino acid sequence fused via a covalent bond to (ii) a second amino acid sequence which specifically binds a gastro-intestinal tract receptor, which receptor is selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), and wherein the second amino acid sequence is selected from the group consisting of

(a) a protein comprising an amino acid sequence selected from SEQ ID NOS:1-55 or a binding portion thereof;

(b) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence

of: Xaa_1 Thr Xaa_2 Xaa_3 Ser Xaa_4 Xaa_5 Xaa_6 Asn Xaa_7 Arg (SEQ ID NO:253), where Xaa_1 is Ser or Thr; Xaa_2 is Arg or Lys; Xaa_3 is Lys or Arg; Xaa_4 is Ser or Leu; Xaa_5 is Arg, Ile, Val, or Ser; Xaa_6 is Ser, Tyr, Phe, or His; and Xaa_7 is Pro, His or Arg;

(c) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa_1 Asp Xaa_2 Arg Arg Xaa_3 Xaa_4 (SEQ ID NO:254) where Xaa_1 is Ser, Ala, or Gly; Xaa_2 is Val or Gln; Xaa_3 is Pro, Gly, or Ser; and Xaa_4 is Trp or Tyr;

(d) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa_1 Xaa_2 Ser Ser (SEQ ID NO:255), where Xaa_1 is Ala or Phe; and Xaa_2 is Arg or His;

(e) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256);

(f) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STKRSLIYNHR (SEQ ID NO:257);

(g) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STGRKVFNRR (SEQ ID NO:258);

(h) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: TNAKHSSHNRR (SEQ ID NO:259);

(i) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260);

(j) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: AADQRRGW (SEQ ID NO:261);

(k) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DGRGGRSY (SEQ ID NO:262);

(l) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263);

(m) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRSGCGFRGSS (SEQ ID NO:264); and

(n) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRGGCGAHSS (SEQ ID NO:265).

182. The composition of claim 181 wherein the protein comprises an amino acid sequence selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.

183. The composition of claim 181 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa_1 Thr Xaa_2 Xaa_3 Ser Xaa_4 Xaa_5 Xaa_6 Asn Xaa_7 Arg (SEQ ID NO:253), where Xaa_1 is Ser or Thr; Xaa_2 is Arg or Lys; Xaa_3 is Lys or Arg; Xaa_4 is Ser or Leu; Xaa_5 is Arg, Ile, Val, or Ser; Xaa_6 is Ser, Tyr, Phe, or His; and Xaa_7 is Pro, His or Arg.

184. The composition of claim 181 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa_1 Asp Xaa_2 Arg Arg Xaa_3 Xaa_4 (SEQ ID NO:254) where Xaa_1 is Ser, Ala, or Gly; Xaa_2 is Val or Gln; Xaa_3 is Pro, Gly, or Ser; and Xaa_4 is Trp or Tyr.

185. The composition of claim 181 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa_1 Xaa_2 Ser Ser (SEQ ID NO:255), where Xaa_1 is Ala or Phe; and Xaa_2 is Arg or His.

186. The composition of claim 181 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256) or STKRSLIYNHR (SEQ ID NO:257) or STGRKVFNRR (SEQ ID NO:258) or TNAKHSSHNRR (SEQ ID NO:259).

187. The composition of claim 181 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260) or AADQRRGW (SEQ ID NO:261) or DGRGGRSY (SEQ ID NO:262).

188. The composition of claim 181 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263) or SVRSGCGFRGSS (SEQ ID NO:264) or SVRGGCGAHSS (SEQ ID NO:265).

189. The composition of claim 181 wherein the material is a particle containing the active agent.

190. The composition of claim181 wherein the material is a slow-release device containing the active agent.

191. The composition of claim 181 wherein the active agent is a drug.

192. The composition of any one of claims 182-191 wherein the purified protein is not more than 40 amino acids in length.

193. The composition of any one of claims 182-191 wherein the purified protein is not more than 30 amino acids in length.

194. The composition of any one of claims 182-191 wherein the purified protein is not more than 20 amino acids in length.

195. The composition of any one of claims 182-191 wherein said composition facilitates the transport of the active agent through human or animal gastro-intestinal tissue.

196. A pharmaceutical composition comprising a therapeutically effective amount of the composition of any one of claims 182-191, and a pharmaceutically acceptable carrier.

197. A composition comprising a purified protein which specifically binds a gastro-intestinal tract receptor, which receptor is selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), wherein the purified protein is covalently bound to a drug, said drug being of value in the treatment of a mammalian disease or disorder, and wherein the protein is selected from the group consisting of

(a) a protein comprising an amino acid sequence selected from SEQ ID NOS:1-55 or a binding portion thereof;

(b) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa_1 Thr Xaa_2 Xaa_3 Ser Xaa_4 Xaa_5 Xaa_6 Asn Xaa_7 Arg (SEQ ID NO:253), where Xaa_1 is Ser or Thr; Xaa_2 is Arg or Lys; Xaa_3 is Lys or Arg; Xaa_4 is Ser or Leu; Xaa_5 is Arg, Ile, Val, or Ser; Xaa_6 is Ser, Tyr, Phe, or His; and Xaa_7 is Pro, His or Arg;

(c) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa_1 Asp Xaa_2 Arg Arg Xaa_3 Xaa_4 (SEQ ID NO:254) where Xaa_1 is Ser, Ala, or Gly; Xaa_2 is Val or Gln; Xaa_3 is Pro, Gly, or Ser; and Xaa_4 is Trp or Tyr;

(d) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa_1 Xaa_2 Ser Ser (SEQ ID NO:255), where Xaa_1 is Ala or Phe; and Xaa_2 is Arg or His;

(e) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256);

(f) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STKRSLIYNHR (SEQ ID NO:257);

(g) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STGRKVFNRR (SEQ ID NO:258);

(h) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: TNAKHSSHNRR (SEQ ID NO:259);

(i) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260);

(j) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: AADQRRGW (SEQ ID NO:261);

(k) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DGRGGRSY (SEQ ID NO:262);

(l) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263);

(m) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRSGCGFRGSS (SEQ ID NO:264); and

(n) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRGGCGAHSS (SEQ ID NO:265).

198. The composition of claim 197 wherein the protein comprises an amino acid sequence selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.

199. The composition of claim 197 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa_1 Thr Xaa_2 Xaa_3 Ser Xaa_4 Xaa_5 Xaa_6 Asn Xaa_7 Arg (SEQ ID NO:253), where Xaa_1 is Ser or Thr; Xaa_2 is Arg or Lys; Xaa_3 is Lys or Arg; Xaa_4 is Ser or Leu; Xaa_5 is Arg, Ile, Val, or Ser; Xaa_6 is Ser, Tyr, Phe, or His; and Xaa_7 is Pro, His or Arg.

200. The composition of claim 197 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa_1 Asp Xaa_2 Arg Arg Xaa_3 Xaa_4 (SEQ ID NO:254) where Xaa_1 is Ser, Ala, or Gly; Xaa_2 is Val or Gln; Xaa_3 is Pro, Gly, or Ser; and Xaa_4 is Trp or Tyr.

201. The composition of claim 197 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa_1 Xaa_2 Ser Ser (SEQ ID NO:255), where Xaa_1 is Ala or Phe; and Xaa_2 is Arg or His.

202. The composition of claim 197 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256) or STKRSLIYNHR (SEQ ID NO:257) or STGRKVFNRR (SEQ ID NO:258) or TNAKHSSHNRR (SEQ ID NO:259).

203. The composition of claim 197 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260) or AADQRRGW (SEQ ID NO:261) or DGRGGRSY (SEQ ID NO:262).

204. The composition of claim 197 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino

acid sequence of: RVRS (SEQ ID NO:263) or SVRSGCGFRGSS (SEQ ID NO:264) or SVRGGCGAHSS (SEQ ID NO:265).

205. The composition of any one of claims 198-204 wherein the purified protein is not more than 40 amino acids in length.

206. The composition of any one of claims 198-204 wherein the purified protein is not more than 30 amino acids in length.

207. The composition of any one of claims 198-204 wherein the purified protein is not more than 20 amino acids in length.

208. The composition of any one of claims 198-204 wherein said composition facilitates the transport of the active agent through human or animal gastro-intestinal tissue.

209. A pharmaceutical composition comprising a therapeutically effective amount of the composition of any one of claims 198-204, and a pharmaceutically acceptable carrier.

210. A composition comprising a purified protein which specifically binds a gastro-intestinal tract receptor, which receptor is selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), wherein the purified protein is coated onto or absorbed onto or covalently bonded to the surface of a nanoparticle or microparticle, and wherein the protein is selected from the group consisting of

(a) a protein comprising an amino acid sequence selected from SEQ ID NOS:1-55 or a binding portion thereof;

(b) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa_1 Thr Xaa_2 Xaa_3 Ser Xaa_4 Xaa_5 Xaa_6 Asn Xaa_7 Arg (SEQ ID NO:253), where Xaa_1 is Ser or Thr; Xaa_2 is Arg or Lys; Xaa_3 is Lys or Arg; Xaa_4 is Ser or Leu; Xaa_5 is Arg, Ile, Val, or Ser; Xaa_6 is Ser, Tyr, Phe, or His; and Xaa_7 is Pro, His or Arg;

(c) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa_1 Asp Xaa_2 Arg Arg Xaa_3 Xaa_4 (SEQ ID NO:254) where Xaa_1 is Ser, Ala, or Gly; Xaa_2 is Val or Gln; Xaa_3 is Pro, Gly, or Ser; and Xaa_4 is Trp or Tyr;

(d) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa_1 Xaa_2 Ser Ser (SEQ ID NO:255), where Xaa_1 is Ala or Phe; and Xaa_2 is Arg or His;

(e) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256);

(f) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STKRSLIYNHR (SEQ ID NO:257);

(g) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STGRKVFNRR (SEQ ID NO:258);

(h) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: TNAKHSSHNRR (SEQ ID NO:259);

(i) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260);

(j) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: AADQRRGW (SEQ ID NO:261);

(k) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DGRGGRSY (SEQ ID NO:262);

(l) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263);

(m) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRSGCGFRGSS (SEQ ID NO:264); and

(n) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRGGCGAHSS (SEQ ID NO:265).

211. The composition of claim 210 wherein the protein comprises an amino acid sequence selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.

212. The composition of claim 210 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa_1 Thr Xaa_2 Xaa_3 Ser Xaa_4 Xaa_5 Xaa_6 Asn Xaa_7 Arg (SEQ ID NO:253), where Xaa_1 is Ser or Thr; Xaa_2 is Arg or Lys; Xaa_3 is Lys or Arg; Xaa_4 is Ser or Leu; Xaa_5 is Arg, Ile, Val, or Ser; Xaa_6 is Ser, Tyr, Phe, or His; and Xaa_7 is Pro, His or Arg.

213. The composition of claim 210 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa_1 Asp Xaa_2 Arg Arg Xaa_3 Xaa_4 (SEQ ID NO:254) where Xaa_1 is Ser, Ala, or Gly; Xaa_2 is Val or Gln; Xaa_3 is Pro, Gly, or Ser; and Xaa_4 is Trp or Tyr.

214. The composition of claim 210 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa_1 Xaa_2 Ser Ser (SEQ ID NO:255), where Xaa_1 is Ala or Phe; and Xaa_2 is Arg or His.

215. The composition of claim 210 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino

acid sequence of: NTRKSSRSNPR (SEQ ID NO:256) or STKRSLIYNHR (SEQ ID NO:257) or STGRKVFNRR (SEQ ID NO:258) or TNAKHSSHNRR (SEQ ID NO:259).

216. The composition of claim 210 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260) or AADQRRGW (SEQ ID NO:261) or DGRGGRSY (SEQ ID NO:262).

217. The composition of claim 210 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263) or SVRSGCGFRGSS (SEQ ID NO:264) or SVRGGCGAHSS (SEQ ID NO:265).

218. The composition of claim 210 wherein the nanoparticle or microparticle contains a drug.

219. The composition of claim 210 wherein the nanoparticle or microparticle is a slow-release device.

220. The composition of any one of claims 211-219 wherein the purified protein is not more than 40 amino acids in length.

221. The composition of any one of claims 211-219 wherein the purified protein is not more than 30 amino acids in length.

222. The composition of any one of claims 211-219 wherein the purified protein is not more than 20 amino acids in length.

223. The composition of any one of claims 211-219 wherein said composition facilitates the transport of the active agent through human or animal gastro-intestinal tissue.

224. A pharmaceutical composition comprising a therapeutically effective amount of the composition of any one of claims 211-219, and a pharmaceutically acceptable carrier.

225. A nanoparicle or a microparticle formed from a purified protein which specifically binds a gastro-intestinal tract receptor, which receptor is selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), wherein the purified protein is selected from the group consisting of

(a) a protein comprising an amino acid sequence selected from SEQ ID NOS:1-55 or a binding portion thereof;

(b) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa_1 Thr Xaa_2 Xaa_3 Ser Xaa_4 Xaa_5 Xaa_6 Asn Xaa_7 Arg (SEQ ID NO:253), where Xaa_1 is Ser or Thr; Xaa_2 is Arg or Lys; Xaa_3 is Lys or Arg; Xaa_4 is Ser or Leu; Xaa_5 is Arg, Ile, Val, or Ser; Xaa_6 is Ser, Tyr, Phe, or His; and Xaa_7 is Pro, His or Arg;

(c) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa_1 Asp Xaa_2 Arg Arg Xaa_3 Xaa_4 (SEQ ID NO:254) where Xaa_1 is Ser, Ala, or Gly; Xaa_2 is Val or Gln; Xaa_3 is Pro, Gly, or Ser; and Xaa_4 is Trp or Tyr;

(d) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa_1 Xaa_2 Ser Ser (SEQ ID NO:255), where Xaa_1 is Ala or Phe; and Xaa_2 is Arg or His;

(e) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256);

(f) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STKRSLIYNHR (SEQ ID NO:257);

(g) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: STGRKVFNRR (SEQ ID NO:258);

(h) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: TNAKHSSHNRR (SEQ ID NO:259);

(i) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260);

(j) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: AADQRRGW (SEQ ID NO:261);

(k) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DGRGGRSY (SEQ ID NO:262);

(l) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263);

(m) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRSGCGFRGSS (SEQ ID NO:264); and

(n) a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRGGCGAHSS (SEQ ID NO:265).

226. The composition of claim 225 wherein the protein comprises an amino acid sequence selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.

227. The composition of claim 225 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa_1 Thr Xaa_2 Xaa_3 Ser Xaa_4 Xaa_5 Xaa_6 Asn Xaa_7 Arg (SEQ ID NO:253),

where Xaa_1 is Ser or Thr; Xaa_2 is Arg or Lys; Xaa_3 is Lys or Arg; Xaa_4 is Ser or Leu; Xaa_5 is Arg, Ile, Val, or Ser; Xaa_6 is Ser, Tyr, Phe, or His; and Xaa_7 is Pro, His or Arg.

228. The composition of claim 225 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa_1 Asp Xaa_2 Arg Arg Xaa_3 Xaa_4 (SEQ ID NO:254) where Xaa_1 is Ser, Ala, or Gly; Xaa_2 is Val or Gln; Xaa_3 is Pro, Gly, or Ser; and Xaa_4 is Trp or Tyr.

229. The composition of claim 225 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa_1 Xaa_2 Ser Ser (SEQ ID NO:255), where Xaa_1 is Ala or Phe; and Xaa_2 is Arg or His.

230. The composition of claim 225 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256) or STKRSLIYNHR (SEQ ID NO:257) or STGRKVFNRR (SEQ ID NO:258) or TNAKHSSHNRR (SEQ ID NO:259).

231. The composition of claim 225 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: DSDVRRPW (SEQ ID NO:260) or AADQRRGW (SEQ ID NO:261) or DGRGGRSY (SEQ ID NO:262).

232. The composition of claim 225 wherein the protein is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: RVRS (SEQ ID NO:263) or SVRSGCGFRGSS (SEQ ID NO:264) or SVRGGCGAHSS (SEQ ID NO:265).

233. The composition of any one of claims 226-232 wherein the purified protein is not more than 40 amino acids in length.

234. The composition of any one of claims 226-232 wherein the purified protein is not more than 30 amino acids in length.

235. The composition of any one of claims 226-232 wherein the purified protein is not more than 20 amino acids in length.

236. The composition of any one of claims 226-232 wherein said composition facilitates the transport of the active agent through human or animal gastro-intestinal tissue.

237. A pharmaceutical composition comprising a therapeutically effective amount of the composition of any one of claims 226-232, and a pharmaceutically acceptable carrier.

238. A pharmaceutical composition comprising a therapeutically effective amount of a chimeric protein comprising (i) a first protein comprising at least 6 contiguous amino acids of an amino acid sequence selected from the group consisting of SEQ ID NOS:1-55, said contiguous amino acids being capable of specifically binding to a gastro-intestinal tract receptor selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), said first protein being fused via a covalent bond to (ii) a second protein, said second protein being a drug; and a pharmaceutically acceptable carrier.

239. A pharmaceutical composition comprising a therapeutically effective amount of a nucleic acid encoding a chimeric protein comprising (i) a first protein comprising at least 6 contiguous amino acids of an amino acid sequence selected from the group consisting of SEQ ID NOS:1-55, said contiguous amino acids capable of specifically binding to a gastro-intestinal tract receptor selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), said first protein being fused via a covalent bond to (ii) a second protein, said second protein being a drug; and a pharmaceutically acceptable carrier.